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PATENT APPLICATION
(Attorney Docket No. 38473R1)

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

In re application of: Robert C. Meier

Serial Number: 09/729,676

Filed: December 2, 2000

Assistant Commissioner for Patents
Washington, DC 20231

SIR:

Attention: Initial Patent Examination Division

PRELIMINARY AMENDMENT

Please change the title of the Application to read:

--Mobile Virtual Network System and Method--

Please add the ABSTRACT OF THE DISCLOSURE on the following page, as the last page of the specification.

CERTIFICATE OF MAILING

I hereby certify that on the date shown below, this PRELIMINARY AMENDMENT consisting of four pages, is being deposited with sufficient postage with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231.

Date: April 10, 2001

John H. Sherman

John H. Sherman, Reg. No. 16,909

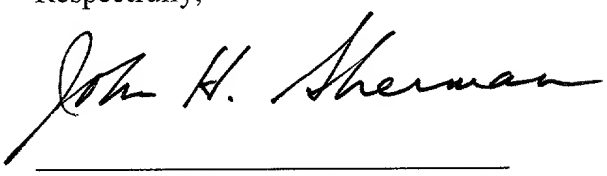
REMARKS

By the present amendment, the title is being changed so as to better reflect the claim of the application.

The Abstract submitted herewith is similar to that being presented in Robert C. Meier application No. 09/569,548 filed May 12, 2000 which has the same title as the newly proposed title herein.

In case it may be required, attached hereto is a marked-up version of the changes made to the title by the current amendment. The attached page is captioned **"Version with marking to show changes made."**

Respectfully,



John H. Sherman, Reg. No. 16,909
Legal Department
Intermec Technologies Corporation
Cedar Rapids, IA 52401

VERSION WITH MARKING TO SHOW CHANGES MADE

In the specification:

Page 1, please change the title to read:

-- Mobile Virtual ~~Private~~ Network System and Method --

PATENT APPLICATION
(Attorney Docket No. 38473R1)

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

In re application of: Robert C. Meier

Application No.: 09/729,676

Filed: December 2, 2000

Attention: Initial Patent Examination Division
Assistant Commissioner for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

SIR:

With regard to the Notice to File Missing Parts of Nonprovisional Application dated January 18, 2001, please amend the above-identified application as follows:

In the Specification:

1) Please remove the last paragraph on page 6 and replace it with the following rewritten paragraph:

CERTIFICATE OF MAILING

I hereby certify that, on the date shown below, this PRELIMINARY AMENDMENT, consisting of nine (9) pages, is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231.

May 17, 2001
Date

John H. Sherman, Reg. 16,909

-- A Virtual Private Network (VPN) can be used to connect a network host to its home network over another network, such as the Internet. A VPN is most commonly implemented by logically extending a PPP connection through an L2TP or PPTP tunnel. In practice, each end point of a VPN tunnel is often defined by an IP address. Figure 1 shows the logical components for a typical VPN with an underlying IP internetwork. The dial-up link and the L2TP tunnel are concatenated to form a logical PPP link between the remote host and the network access server (NAS) for the home network. A local IP address is associated with the end point of the L2TP tunnel in the L2TP access concentrator (LAC). An IP address on the home network is associated with the end point of the L2TP tunnel in the L2TP network server (LNS). Logically, the remote host is on a point-to-point subnet of the home network. An L2TP tunnel such as the one in figure 1 is often called a "compulsory tunnel". --

2) Please remove Figure 1 and Figure 2 from page 7.

3) Please remove Figure 3 and Figure 4 from page 8.

4) Please replace paragraph 3 on page 8 with the following rewritten paragraph:

-- Figure 3 shows an IP packet, from a remote host, as it exists in the L2TP tunnel.--

5) Please replace paragraph 5 on page 8 with the following rewritten paragraph:

-- Figures 4 and 5 show example partial protocol stacks for a PPP host and a VPN host, respectively. --

6) Please remove Figure 5 from page 9.

7) Please replace paragraph 1 on page 9 with the following rewritten paragraph:

-- The "encapsulation" layer, in Figure 5, includes network-specific logic for encapsulating L2TP packets. The "link" layer is responsible for establishing a link layer connection to the network. On a dial-up IP network, for example, the "link" layer may establish a PPP connection with a local ISP. IPCP is used on the local PPP connection to obtain a local IP address from the ISP. L2TP packets are then encapsulated in IP packets and forwarded to the LNS. The source and destination addresses, in the IP encapsulation header, identify L2TP tunnel end points in the client and LNS, respectively. Note that IPSec can be used to encrypt the encapsulated L2TP packet. Figure 6 shows such an example protocol stack. --

8) Please remove Figure 6 from page 10.

9) Please replace paragraph 7 on page 15 with the following rewritten paragraph:

-- Figure 7 shows the sequence of events for establishing an MVTP tunnel. --

10) Please remove Figure 7 from page 16.

11) Please replace paragraph 7 on page 17 with the following rewritten paragraph:

-- Figure 8 shows an example protocol stack for a typical WLAN PPP host. The MVTP client layer replaces the dialing logic in a point-to-point host that connects through a switched network. The WLAN layer provides wireless LAN framing.--

12) Please remove Figure 8 and Figure 9 from page 18.

13) Please replace paragraph 1 on page 18 with the following rewritten paragraph:

-- A Mobile VPN foreign agent (MVTP FA) must exist on each IP subnet to which a mobile PPP host can roam. Figure 9 shows the protocol stack in an MVTP FA that uses IP for the L2TP transport. --

14) Please remove Figure 10 from page 19.

15) Please replace paragraph 4 on page 19 with the following rewritten paragraph:

-- Figure 10 shows the sequence of steps for establishing the concatenated MVTP connection and L2TP session. Note that the L2TP ICRQ, ICRP, and ICRN messages are sent on a reliable L2TP control connection. The setup steps for the control connection are not shown. --

16) Please remove Figure 11 from page 20.

17) Please replace paragraph 5 on page 20 with the following rewritten paragraph:

-- PPP control and data frames are encapsulated in MV-DATA PDUs, on WLAN links. An example MV-DATA PDU is shown in Figure 11. If the data PDU is from an MVTP client, then the 802 destination address is the WLAN interface address of the MVTP FA and the 802 source address is the WLAN interface address of the PPP host. The MVTP header contains the Local Endpoint ID for the client. --

18) Please remove Figure 12 from page 22.

19) Please replace paragraph 4 on page 22 with the following rewritten paragraph:

-- Figure 12 illustrates the relationship between L2TP and MVTP. Note that Mobile L2TP requires an MVTP server in the LNS. Concatenated MVTP data link and IP tunnels provide the underlying transport for L2TP. An MVTP tunnel is initially created, as described in the *Mobile VPN Tunneling Protocol* section, when the L2TP entity in a mobile host "opens" the underlying transport tunnel. An L2TP tunnel/session, between a VPN host and an LNS, is not lost when the mobile host roams to a new IP subnet and the underlying MVTP tunnel changes; therefore, mobility is transparent to L2TP. --

20) Please remove Figures 13 and 14 from page 23.

21) Please replace paragraph 2 on page 23 with the following rewritten paragraph:

-- Figure 13 shows an example L2TP message, sent from an MVTP server, encapsulated on an MVTP IP/GRE tunnel. --

22) Please replace paragraph 3 on page 23 with the following rewritten paragraph:

-- Figure 14 shows the example L2TP message from Figure 13, as forwarded by the MVTP FA, encapsulated on an MVTP data link tunnel. --

23) Please replace paragraph 5 on page 25 with the following rewritten paragraph:

-- Figure 14 shows an example L2TP message, destined to an MVTP client, encapsulated on an MVTP data link tunnel. Figure 15 shows the same L2TP message, as forwarded by the MVTP FA, with IP, IPSec, and GRE encapsulation.--

24) Please remove Figure 15 from page 25.

25) Please replace paragraph 6 on page 26 with the following rewritten paragraph:

-- An MMP host, and the LNS for its home subnet, must support standard Multi-link PPP [7]. An MMP host establishes a Multi-link PPP connection with its LNS. At any given time, the Multi-link PPP "bundle", for an MMP host, can include a "WAN link", a "LAN link", or both. In general, the WAN link is used to sustain ubiquitous coverage, when an LAN link is not available. It is assumed that the WAN link is a switched link between the MMP host and a "dial-up" port on the LNS for the MMP host's home subnet. The LAN link is actually a PPP connection that exists on top of an L2TP VPN, where MVTP is used as the mobile transport for L2TP. Figure 16 shows the protocol relationships in a virtual PPP connection between an MMP host and the LNS for its home subnet. --

26) Please remove Figure 16 from page 27.

In the Claims:

Claim [1] of this application is identical to Claim [1] of Application No. 09/569,548.

REMARKS

By the present amendment, the drawings or flow diagrams contained in the specification are hereby removed in accordance with 37 CFR 1.58(a). Formal drawings for Figures 1-16 are hereby submitted in accordance with 37 CFR 1.81. References in the specification to Figures 1-16 are hereby modified to correlate with these changes.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned **"Version with markings to show changes made."**

Respectfully submitted,

John H. Sherman

John H. Sherman, Reg. No. 16,909
Attorney of Record

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Cedar Rapids, IA 52401
Phone: 319/369-3661
Fax: 319/369-3630

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

1) The last paragraph on page 6 has been amended as follows:

-- A Virtual Private Network (VPN) can be used to connect a network host to its home network over another network, such as the Internet. A VPN is most commonly implemented by logically extending a PPP connection through an L2TP or PPTP tunnel. In practice, each end point of a VPN tunnel is often defined by an IP address. Figure 1~~, below,~~ shows the logical components for a typical VPN with an underlying IP internetwork. The dial-up link and the L2TP tunnel are concatenated to form a logical PPP link between the remote host and the network access server (NAS) for the home network. A local IP address is associated with the end point of the L2TP tunnel in the L2TP access concentrator (LAC). An IP address on the home network is associated with the end point of the L2TP tunnel in the L2TP network server (LNS). Logically, the remote host is on a point-to-point subnet of the home network. An L2TP tunnel such as the one in figure 1 is often called a "compulsory tunnel". --

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